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Sensors**

## *HWCI 3.5.5 Radiometer*

- Requirements Traceability
  - Floor IR
    - Section 3.5.3.3.4
  - Canopy IR
    - Section 3.5.3.3.5
  - Atmospheric IR
    - Section 3.5.3.3.6



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## *HWCI 3.5.5 Radiometer*

- **Functional and Performance Requirements**
  - Redundancy for Earth Temperature IR
  - Wavelength - 800 to 2500 nm
  - Beamwidth - 70 -80 deg for Floor and Canopy  
6 - 60 deg for Atmospheric



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## *HWCI 3.5.5 Radiometer*

- HWCI Description
  - Physical
    - 5.75" dia, 3.5" high
    - 7 lb
  - Electrical
    - Impedance - 700 ohms
    - Sensitivity - 4 microvolts/watt meter sq
- Risk Assessment & Mitigation/Reliability
  - Balloon Heritage





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## *HWCI 3.5.5 Radiometer*

- 3.5.3.3.4 Floor (down looking) IR – required sensor bandwidth 800 to 2500 nanometers. The sensor shall be down looking. The desired hemispherical beamwidth shall be equal to the angle of the earth and atmosphere from float altitude. The required minimum sample rate is once per minute. The desired accuracy is +/- 1 watt.
- 3.5.3.3.5 Canopy (sky) IR – The required sensor bandwidth is 800 to 2500 nanometers. The sensor shall be up looking and mounted on the top of the balloon. The required hemispherical beamwidth is between +/- 70 degrees and +/- 90 degrees. The required minimum sample rate is once per minute. The desired accuracy is +/- 1 watt.
- 3.5.3.3.6 Atmospheric IR – The required sensor bandwidth is 800 to 2500 nanometers. The sensor shall be mounted in the anti-sun direction, and mounted in elevation to sense the earth atmosphere and cold sky. The required hemispherical beamwidth is between 6 and 60 degrees, with lower beamwidth more desirable. The required minimum sample rate is once per minute. The desired accuracy is +/- 1 watt.



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